In the Claims:

1. (Previously presented) A medical decision support system, comprising:

a processor;

a memory device;

a first input module for acquiring gene expression data, said first input module operably connected to a first classifier/predictor module to classify said gene expression data; and

a second input module for acquiring clinical information, said second input module operably connected to a second classifier/predictor module to classify said clinical information;

said memory device having software to combine said classified gene expression data and said classified clinical information to predict an outcome of a disease or its treatment; and

an output device;

said software to combine comprising instructions to calculate connection weights β_1, β_2 and α between Class A and Class B classifier outputs to produce a combined Class A/Class B output according to the following steps:

i. assign initial connection weights β_1, β_2 and α between 0 and 1;

ii. calculate Combined Class A output = (C1/classA x β_1) + (C2/classA x β_2);

iii. calculate Combined Class B output = (C1/classB x (1 - β_1)) x (C2/classB x (1 - β_2));

iv. calculate Combined Class A/Class B output = (Combined Class A output x α) + (Combined Class B output x (1 – α));

so that the error of Combined Class A/Class B output is minimized and said combined Class A/Class B output has greater accuracy than either Class A output or Class B output individually;

wherein Class A is a first medical outcome, Class B is a second medical outcome, C1 is classified gene expression data and C2 is classified clinical information; said Combined Class A/Class B output being between 0 and 1; and wherein if said Combined Class A/Class B output is closer to 0, said outcome is Class A and wherein if said Combined Class A/Class B output is closer to 1, said outcome is Class B; and

v. display said combined Class A/Class B output on said output device.

2. (Previously presented) The system of claim 1, further comprising an output module, wherein said software calculating said error of Combined Class A/Class B output is minimized using one of an exhaustive search method, a statistically based specialization method, a multi-layer perceptron method, an evolving fuzzy neural network (EFuNN) process or a Bayesian process.

3. (Previously presented) A method for evaluating a medical decision using a computer device, comprising the steps of:

(a) using a first classifier/predictor module of said computer device to classify gene expression information and to derive a prediction from said gene expression data;

(b) using a second classifer/predictor module of said computer device to classify clinical information and to derive a prediction from said clinical information; and

(c) combining said prediction derived from said classified gene expression information and said prediction derived from said classified clinical information to predict an outcome of a disease or its treatment; said combining comprising calculating connection weights β_1, β_2 and α between Class A and Class B classifier outputs to produce a combined Class A/Class B output according to the following steps:

i. assign initial connection weights β_1, β_2 and α between 0 and 1;

ii. calculate Combined Class A output = (C1/classA x β_1) + (C2/classA x β_2);

iii. calculate Combined Class B output = (C1/classB x (1 - β_1)) x (C2/classB x (1 - β_2));

iv. calculate Combined Class A/Class B output = (Combined Class A output x α) + (Combined Class B output x (1 – α));

so that the error of Combined Class A/Class B output is minimized and said combined Class A/Class B output has greater accuracy than either Class A output or Class B output individually;

wherein Class A is a first medical outcome, Class B is a second medical outcome, C1 is classified gene expression data and C2 is classified clinical information; said Combined Class A/Class B output being between 0 and 1; and wherein if said Combined Class A/Class B output is closer to 0 said outcome is Class A and wherein if said Combined Class A/Class B output is closer to 1 said outcome is Class B; and

displaying said combined Class A/Class B outcome.

4. (Previously presented) The method of claim 3, wherein said steps (a) and (b) include at least one of an exhaustive search method, a statistically based specialization method, a multi-layer perceptron method, an evolving fuzzy neural network (EFuNN) process and a Bayesian process.

5. (Previously presented) The computer system of Claim 1, further comprising:

an additional predictor module comprising combined gene expression data and clinical information data.

6. (Previously presented) The computer system of claim 5, further comprising software to use classified information in said additional predictor module to minimize said error in said Combined Class A/Class B Outcome using either an exhaustive search method or a multi-layer perceptron method.

7. (Cancelled)

8. (Previously presented) The system of claim 1, further comprising:

a class unit layer comprising at least two classes of interest into which items of said gene expression data and items of said clinical information are sorted;

a classifier module layer comprising at least two classifier modules, a gene expression data classifier module operably connected to said first input device and operably connected to each of said at least two classes thereby capable of producing said connection weights β_1 and β_2, and a clinical information classifier module operably connected to said second input device and operably connected to each of said at least two classes thereby capable of producing connection weights $(1 - \beta_1)$ and $(1 - \beta_2)$; and

a decision layer operably connected to each of said two classes and operably connected to an output device.

9. (Previously presented) The system of claim 8, wherein said decision layer comprises software to combine results from at least two of an EFuNN process, a Bayesian process, a neural network module, a support vector machine, a rule-based system, a decision tree and a statistical method.

10. (Previously presented) The system of claim 8, wherein output of said output device comprises at least one of a diagnosis, an evaluation of a clinical condition and an evaluation of a patient outcome.

11. (Previously presented) The system of claim 8, wherein at least one of said classifier module layer and said decision layer comprise at least one of an evolving connectionist system (ECoS) and an evolving classification function (ECF).

12. (Previously presented) The system of claim 11, wherein said decision layer further comprises an EFuNN.

13. (Previously presented) The method of claim 3, wherein

said step (a) of using a first classifier/predictor module comprises using a class unit layer comprising at least two classes of interest into which items of said gene expression data and items of said clinical information are sorted;

said step (b) of using a second classifier/predictor module comprises using a classifier module layer comprising at least two classifier modules, a gene expression data classifier module operably connected to said first input device and operably connected to each of said at least two classes, and a clinical information classifier module operably connected to said second input device and operably connected to each of said at least two classes;

and said step (c) of combining comprises using a decision layer operably connected to each of said two classes and operably connected to an output device; and

said step (c) of combining further comprises processing input from said at least two classes in said decision layer to predict a medical outcome.

14. (Previously presented) The method of claim 13, wherein said step of using a decision layer comprises using software to combine at least two of an EFuNN process, a Bayesian process, a neural network module, a support vector machine, a rule-based system, a decision tree and a statistical method.

15. (Previously presented) The method of claim 13, wherein output of said output device comprises at least one of a diagnosis, an evaluation of a clinical condition and an evaluation of a patient outcome.

16. (Previously presented) The method of claim 13, wherein at least one of said classifier module layer and said decision layer comprise at least one of an ECoS and an ECF.

17. (Previously presented) The method of claim 16, wherein said decision layer further comprises an EFuNN.

18. (Previously presented) The medical decision support system of Claim 1, wherein said software calculating said error of Combined Class A/Class B output is minimized using an exhaustive search method.

19. (Previously presented) The medical decision support system of Claim 1, wherein said software calculating said error of Combined Class A/Class B output is minimized using one of a statistically based specialization method.

20. (Previously presented) The medical decision support system of Claim 1, wherein said software calculating said error of Combined Class A/Class B output is minimized using a multi-layer perceptron method.

21. (Previously presented) The medical decision support system of Claim 1, wherein said software calculating said error of Combined Class A/Class B output is minimized using an evolving fuzzy neural network (EFuNN) process.

22. (Previously presented) The medical decision support system of Claim 1, wherein said software calculating said error of Combined Class A/Class B output is minimized using a Bayesian process.

23. (Previously presented) A medical decision support system, comprising:

a processor;

a memory device;

a first input module for acquiring data from a first source, said first input module operably connected to a first classifier/predictor module to classify said data from said first source, producing a First Class classifier output; and

a second input module for acquiring data from a second source, said second input module operably connected to a second classifier/predictor module to classify said data from said second source, producing a Second Class classifier output;

said memory device having software to combine said First Class classifier output and Second Class classifier outputs to predict an outcome of a disease or its treatment; and

an output device;

said software to combine comprising instructions to calculate connection weights β_1, β_2 and α between said First Class classifier output and said Second Class classifier output to produce a combined First Class /Second Class output according to the following steps:

i. assign initial connection weights β_1, β_2 and α between 0 and 1;

ii. calculate Combined First Class classifier output = (C1/First Class x β_1) + (C2/First Class x β_2);

iii. calculate Combined Second Class output = (C1/Second Class output x $(1 - \beta_1)$) x (C2/Second Class output x $(1 - \beta_2)$);

iv. calculate Combined First Class/Second Class output = (Combined First Class output x α) + (Combined Second Class output x $(1 - \alpha)$);

so that the error of Combined First Class /Second Class output is minimized and said combined First Class /Second Class output has greater accuracy than either First Class output or Second Class output individually;

wherein First Class is a first medical outcome, Second Class is a second medical outcome, C1 is classified gene expression data and C2 is classified clinical information; said Combined First Class /Second Class output being between 0 and 1; and wherein if said Combined First Class /Second Class output is closer to 0, said outcome is First Class and wherein if said Combined First Class /Second Class output is closer to 1, said outcome is Second Class; and

v. display said combined First Class /Second Class output on said output device.